Grape (Muscadine)

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Scientific Name and Introduction: Muscadine grapes (*Vitis rotundifolia* Michx.) are grown primarily in the southern U.S. (Olien, 1990). Unlike *V. lambrusca* and *V. vinifera*, muscadines are borne singly or in small clusters of 3 to 10 berries and detach from their pedicels when ripe. *V. rotundifolia* is more resistant to disease than bunch grapes. Muscadines are often separated into types based on color. Most commercially important fresh or processed grapes are of the bronze type. Several new varieties are of the black (dark purple) type. Fry, Noble and Granny Val are the most common bronze cultivars used for fresh market; 'Carlos' (bronze) is used for juice and some fresh markets. Other promising black varieties are Nesbitt and Black Beauty.

Quality Characteristics and Criteria: High quality muscadines are free of injury, decay, and sunscald, appear and feel turgid, have a dry stem scar, and are fully black or bronzed in color.

Horticultural Maturity Indices: For fresh market, maturity can be determined by the ability to detach berries from their stems, or when the SSC is between 14 and 18% (Ballinger and McClure, 1983; Smit et al., 1971).

Grades, Sizes and Packaging: No standard packaging exists; quart size is most commonly used. Grapes are generally packaged as single or small clusters of berries in plastic, vented clamshells.

Pre-cooling Conditions: Use forced-air to lower the temperature to ≤2 °C within 12 h of harvest.

Optimum Storage Conditions: Muscadine grapes can be held at -0.5 to 0 °C with > 90% RH for 1 to 4 weeks (Ballinger and McClure, 1983; Lutz, 1939). Temperatures of 20 °C for 2 days after any cold storage interval shortens subsequent shelf-life < 1 week (Ballinger and McClure, 1983).

Controlled Atmosphere (CA) Considerations: Preliminary data indicate that 'Fry' muscadines have reduced decay when held in 10% O_2 + 10 to15% CO_2 (Perkins-Veazie, unpublished).

Retail Outlet Display Conditions: Muscadines should be stored and displayed at the coldest refrigeration temperature possible without freezing. As little as 2 days at room temperature can stimulate growth of molds, especially ripe rot.

Chilling Sensitivity: Muscadines are not known to be chilling sensitive.

Ethylene Production and Sensitivity: Stimulation of *Botrytis cinerea* (gray mold) growth can occur on grapes and stems in the presence of ethylene. Ethylene production from muscadines is less than 0.1 μL kg^{-1} h^{-1} (Perkins-Veazie, unpublished data).

Respiration Rates:

Temperature	mg kg^{-1} h^{-1}
2 °C	6 to 14
5 °C	8 to 18
20 °C	33 to 68

To get mL kg^{-1} h^{-1}, divide the mg kg^{-1} h^{-1} rate by 2.0 at 0 °C (32 °F), 1.9 at 10 °C (50 °F), and 1.8 at 20 °C

(68 °F). To calculate heat production, multiply mg kg^{-1} h^{-1} by 220 to get BTU per ton per day or by 61 to get kcal per metric ton per day. Data are from Perkins-Veazie (unpublished).

Physiological Disorders: Sunburn, bleaching or stipple from SO_2 (Ballinger and Nesbitt, 1982).

Postharvest Pathology: Botrytis, yeasts, ripe rot (*Colletotrichum gloesporioides*), macrophoma rot (*Botryosphaeria dothidea*), blue mold (*Penicillium*) (Pearson and Goheen, 1988; Ballinger and McClure, 1983).

Quarantine Issues: None known.

Suitability as Fresh-cut Product: Unknown. Processing work with juice and jellies indicates that unstable pigments may cause browning problems if used for minimal processing (Flora, 1977).

Special Considerations: Sodium metabisulfite pads and generators (12 to 21 μL L^{-1} SO_2) have been used to extend shelf-life of muscadines from 2 to 8 weeks (Ballinger and Nesbitt, 1982; James et al., 1997; Smit et al., 1971).

References:

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